Finding the Inverse of a Function

The equation for the inverse of a function f can be found as follows:

1. Replace f(x) with y in the equation for f(x).
2. Interchange x and y.
3. Solve for y. If this equation does not define y as a function of x, the function f does not have an inverse function and this procedure ends. If this equation does define y as a function of x, the function f has an inverse function.
4. If f has an inverse function, replace y in step 3 by $f^{-1}(x)$. We can verify our result by showing that $f(f^{-1}(x)) = x$ and $f^{-1}(f(x)) = x$.

Example 2: The functions are all one-to-one. For each function,

a. Find an equation for $f^{-1}(x)$, the inverse function.
b. Verify that your equation is correct by showing that $f(f^{-1}(x)) = x$ and $f^{-1}(f(x)) = x$.

Example 3: